



STATE OF NORTH DAKOTA
OFFICE OF ATTORNEY GENERAL
ATTORNEY GENERAL WAYNE STENEHJEM

CRIME LAB DIVISION

SYNTHETIC CANNABINOIDS



Charlene Schweitzer & Troy Goetz

Forensic Scientists

North Dakota Office of Attorney General

Crime Laboratory



SYNTHETIC CANNABINOIDS

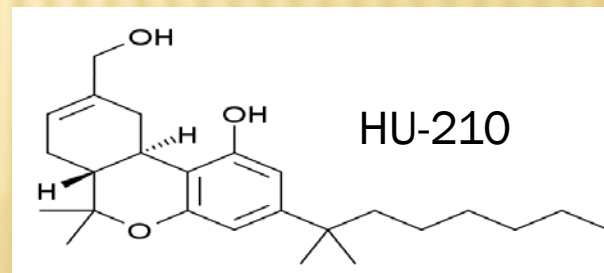
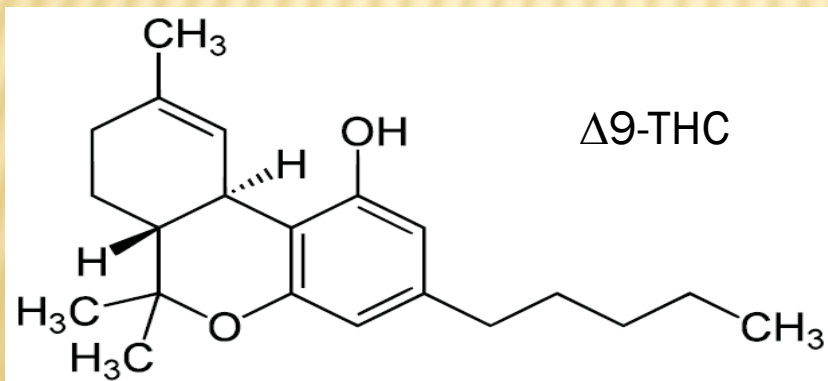
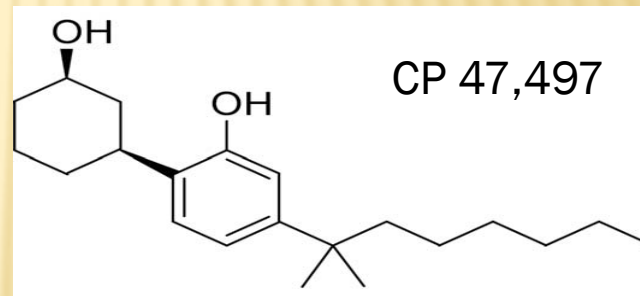
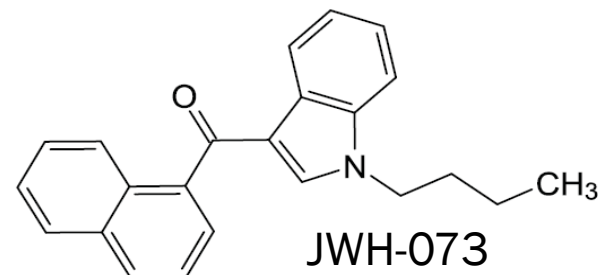
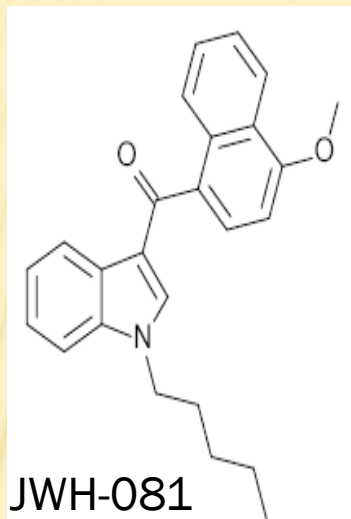
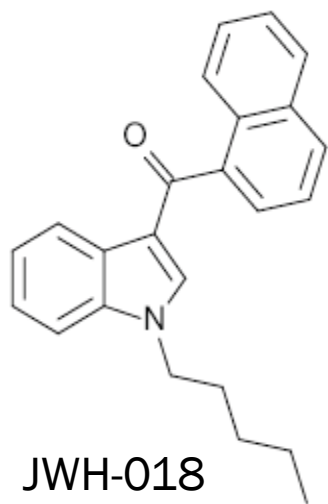
Recent phenomenon in the designer drug market



SYNTHETIC CANNABINOIDS – WHAT ARE THEY?

- Chemical compounds created in a lab setting that can mimic the effects of THC
- Hundreds of synthetic cannabinoid compounds
- Give users “high” similar to THC
- Bind to Cannabinoid receptors in brain which are responsible for a variety of physiological processes, including appetite, pain sensation, mood, and memory
- Most have completely different chemical structure than traditional cannabinoids (THC)

CHEMICAL STRUCTURES



SYNTHETIC CANNABINOID HERBAL BLENDS

- Compounds commonly dissolved into solvent & sprayed onto herbal mixtures
 - Also can soak herbal mixtures in solvent & let evaporate
 - Acetone is solvent commonly used
- Sold as incense or room deodorizers and often labeled “Not for Human Consumption” to avoid scrutiny from FDA



HERBAL COMPONENTS OF “SPICE” PRODUCTS INCLUDE THE FOLLOWING PLANTS:

Beach bean
White waterlily
Blue waterlily
Dwarf skullcap
Indian warrior
Lion's ear/tail
Wild dagga
Maconha brava



Blue lotus
Sacred lotus
Hollyweed
Serbian motherwort
Marshmallow
Dog rose
Rosehips

- ❑ These plants may have been chosen since some have a reputation as marijuana substitutes and may have some psychoactive effects. Often times, the ingredients listed are not even present in the products. Vitamin E is sometimes added presumably to mask the active components.

Smokable Herbal Mixtures

Spice Silver

Spice Gold

Spice Diamond

Spice Arctic Synergy

Spice Tropical Synergy

Spice Egypt

K2

Sence

Yucatan Fire

Smoke

ChillX

Highdi's

Almdrohner

Gorillaz

Skunk

Genie

Galaxy

Gold

Space Truckin

Solar Flare

Moon Rocks

Blue Lotus

Aroma

Scope

Earth Impact

Sparks

HERBAL MIXTURE BRANDS

- Names of herbal mixtures are not important since the composition of products can change from batch to batch both qualitatively & quantitatively
 - Change compounds as certain ones become illegal
 - “Coffee Wonk” Kansas City – so successful considering expanding to Florida & New York
 - Business just as good, if not better, since Missouri’s ban took effect. Newer blend “stronger & smoother taste”
 - Recent blends now contain all technically legal compounds
 - “When they’re constantly changing the chemical makeup, we’ll be constantly chasing our tails.” (Police Chief Ken Burton, Columbia, MO.

Associated Press. Alan Scher Zagier.)

HERBAL MIXTURE BLENDS

- Sometimes numerous compounds are found
 - Up to 7-8 compounds in one herbal blend have been seen
 - Combined effects are unknown
 - Sometimes no cannabinoids are found
 - Sometimes other compounds are found besides synthetic cannabinoids
 - Ex: 5-MeO-DALT (5-Methoxy-N-N-diallyltryptamine), Phenazepam, MDPV, Codeine, & Promethazine
- Dangerous because one really doesn't know what is in the product

“SYN” BRAND SEEN AROUND KANSAS



Contained JWH-081, JWH-200, RCS-8 & JWH-250

“SYN” BRAND SEEN AROUND KANSAS



Contained JWH-250, JWH-081, RCS-8, JWH-200 & an unknown

POSITIVE FOR JWH-018 & JWH-200



Package is labeled “*Syn Incense DOES NOT contain illegal synthetic cannabinoids*”

**Some other brands being labeled as being “Acetone Free”

LABELED “DOES NOT CONTAIN....”



Contained JWH-210 &
JWH-081

CANNABINOID RECEPTORS

- Bind to Cannabinoid receptors in brain
 - (CB1 - Associated with brain, CNS)
 - (CB2 - Associated with the Immune System & Anti-inflammatory Effects)
- Ki value – affinity of a compound for a receptor
 - Smaller Ki value → Stronger it binds to receptor
 - These compounds can bind fully or partially to the CB1 or CB2 receptors
 - Ones that bind more strongly or have higher affinity for the CB1 receptor are thought to be responsible for the pharmacological effects
 - High affinity is defined as $K_i < 100\text{nM}$ (Advisory Council on the Misuse of Drugs)

RECEPTOR BINDING

- Binding vs efficacy:
 - Binding is how well a compound binds to a receptor
 - Efficacy is once that compound is bound, what effects it produces downstream of the receptor.

RECEPTOR BINDING

- More correctly designated as *cannabinoid receptor agonists*
 - Partial agonist: binds to a receptor but only have partial efficacy relative to a full agonist.
 - Full agonist: binds to a receptor and triggers a full response. The full response is response based on the binding of the endogenous compound.
 - Super agonist: binds and activates a receptor with greater efficacy at the receptor compared to the full agonist.

3 TYPES OF CANNABINIODS:

- ❑ Traditional – found naturally in Cannabis
- ❑ Endocannabinoids – found naturally in our body
- ❑ Synthetic – synthesized in the lab

MARIJUANA HISTORY (CANNABIS SATIVA)

- Classical or traditional cannabinoids are only known to occur naturally in significant quantity in the cannabis plant.
- First documented use as medicine was published in China ~5000 yrs ago
 - Recommended for Malaria, constipation, absent mindedness, and female disorders
- Cannabinoids discovered in 1940's when CBD and CBN were identified.
- Eighty-five cannabinoids isolated with three receiving the most study: tetrahydrocannabinol (THC), cannabidiol (CBD) and cannabinol (CBN).

-
- 1964: Raphael Mechoulam of Hebrew University identified THC as the pharmacologically active compound in marijuana.
 - THC is moderate partial agonist with effects of
 - Subjective high
 - Antiemetic
 - Appetite stimulant
 - Hypotension (low blood pressure)
 - Analgesic
 - Habit forming/ addictive

ENDOCANNABINOID HISTORY

- Endocannabinoids are substances produced from within the body that activate cannabinoid receptors.
- After the first cannabinoid receptor discovered in 1988, scientists began searching for an endogenous compound for the receptor.
- First such compound identified in 1992 in Raphael Mechoulam's Israeli lab.
 - Anandamide

SYNTHETIC CANNABINOIDS - HISTORY

- 1964 – THC was identified as the pharmacological active compound in Marijuana
- Late 1960's – Analogs of traditional cannabinoids started being developed for research purposes (ex. HU-210, Nabilone)
 - Pharmaceutical industry & Academic laboratories trying to develop pharmaceutical agents
- 1970's – **Cyclohexylphenols** developed by Pfizer (structures dissimilar to traditional cannabinoids) (ex. CP 47,497)

SYNTHETIC CANNABINOID HISTORY

- 1980'S: Winthrop Pharmaceuticals developed Pravadoline (WIN 48,098) as an anti-inflammatory.
- 1988 – Cannabinoid receptors in rat brain were discovered
 - ~1990 discovered in human brain
- 1992 – First endocannabinoid (inherent to the human body) was discovered
 - Anandamide

SYNTHETIC CANNABINOIDS - HISTORY

- 1990's – J.W. Huffman and associates at Clemson University developed a large number of “JWH” compounds (over 450 JWH compounds developed)
 - Most contain a Nitrogen atom (N) which is different from traditional cannabinoids
 - Focused on making a drug to target the endocannabinoid receptors in the body
 - Studied their different affinities for the CB1 & CB2 brain receptors in rats
 - Human CB1 receptor found to be virtually identical to rat receptor
 - Aided in the research of AIDS, Multiple Sclerosis & Chemotherapy
 - Provided information for medical development and understanding of diseases
 - Significance of number behind JWH compound is order he synthesized them.

CANNABINOIDS CURRENTLY USED FOR MEDICINAL PURPOSES

- ❖ Marinol (synthetic THC): increases appetite and decreases nausea in cancer and AIDS patients (C-III)
- ❖ Cessamet (Nabilone): antiemetic (C-II) derivative of THC
- ❖ Sativex: mouth spray containing THC and CBD. Used in Europe (currently in clinical trial in the US) *
 - ❖ Multiple Sclerosis, Cancer, and Neuropathic Pain
 - ❖ Derived from cannabis plants rather than solely synthetic process
 - ❖ Each dose delivers a fixed dose of 2.7 mg THC and 2.5 mg CBD



DRUG NAMES

- Uniquely named with distinction based on whomever synthesized the compound
 - *JWH* – Dr. Huffman
 - *CP* – Charles Pfizer
 - *WIN* – Winthrop Pharmaceuticals (Sterling-Winthrop)
 - *HU* – Hebrew University
 - *AM* – Alexandros Makriyannis (Northeastern University - Boston, MA)
- *****RCS*** – Believed to be “Research Chemical Supplier” company on internet selling chemicals

“SPICE” HISTORY



WHAT IS “SPICE”

- “Spice” is brand name of the herbal blend that contained synthetic cannabinoids
 - Most likely original
- Used to describe or represent all herbal blends that contain synthetic cannabinoids

“SPICE” HISTORY

- 2004: “Spice” brand products started being sold on the internet and in “Head Shops”
- 2007-2008: Started to be monitored – very little data on psychoactivity of product was available
- Nov 2008: U.S. Customs & Border Protection first encountered products such as Spice
- Dec 2008: JWH-018 Identified in “Spice” products
 - Austria & Switzerland ban the herbal incense Spice





“SPICE” HISTORY

- Jan 2009: Germany & Japan identified CP 47,497 (DMOH) in samples
 - Germany banned CP 47,497 (all homologs) & JWH-018
- Jan 2009: US Customs identified a “small but verifiable” amount of HU-210 in sample
 - Only instance found in US to knowledge
- April 2009: JWH-073 Identified in Spice samples

“SPICE” HISTORY

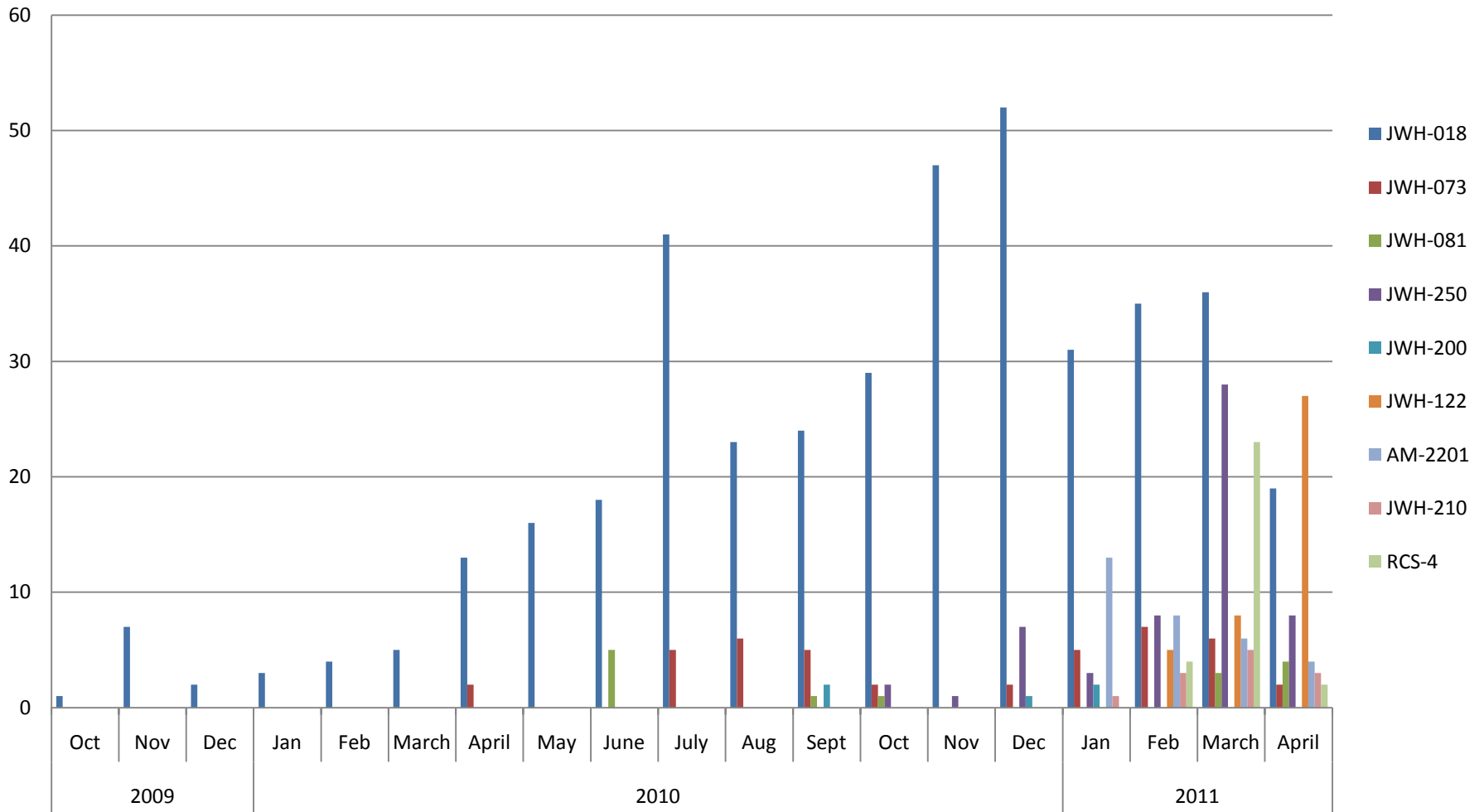
- April 2009: Reports of JWH-250 being found in Spice type products in Germany
- Sept 2009: “K2” reported in Kansas schools
 - ★ Created lots of media attention
- Feb 2010: Bouncing Bear Botanicals was raided (Lawrence, Kansas) – believed to be sole formation of “K2”
 - 10-15 kilograms of K2 were being packaged daily
 - Confiscated 150 to 200 lbs of JWH-018 in 5 gallon buckets & 20 gallons of Acetone



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- Since beginning of 2010 it seems to have spread all across the United States with many states enacting emergency legislation to control it

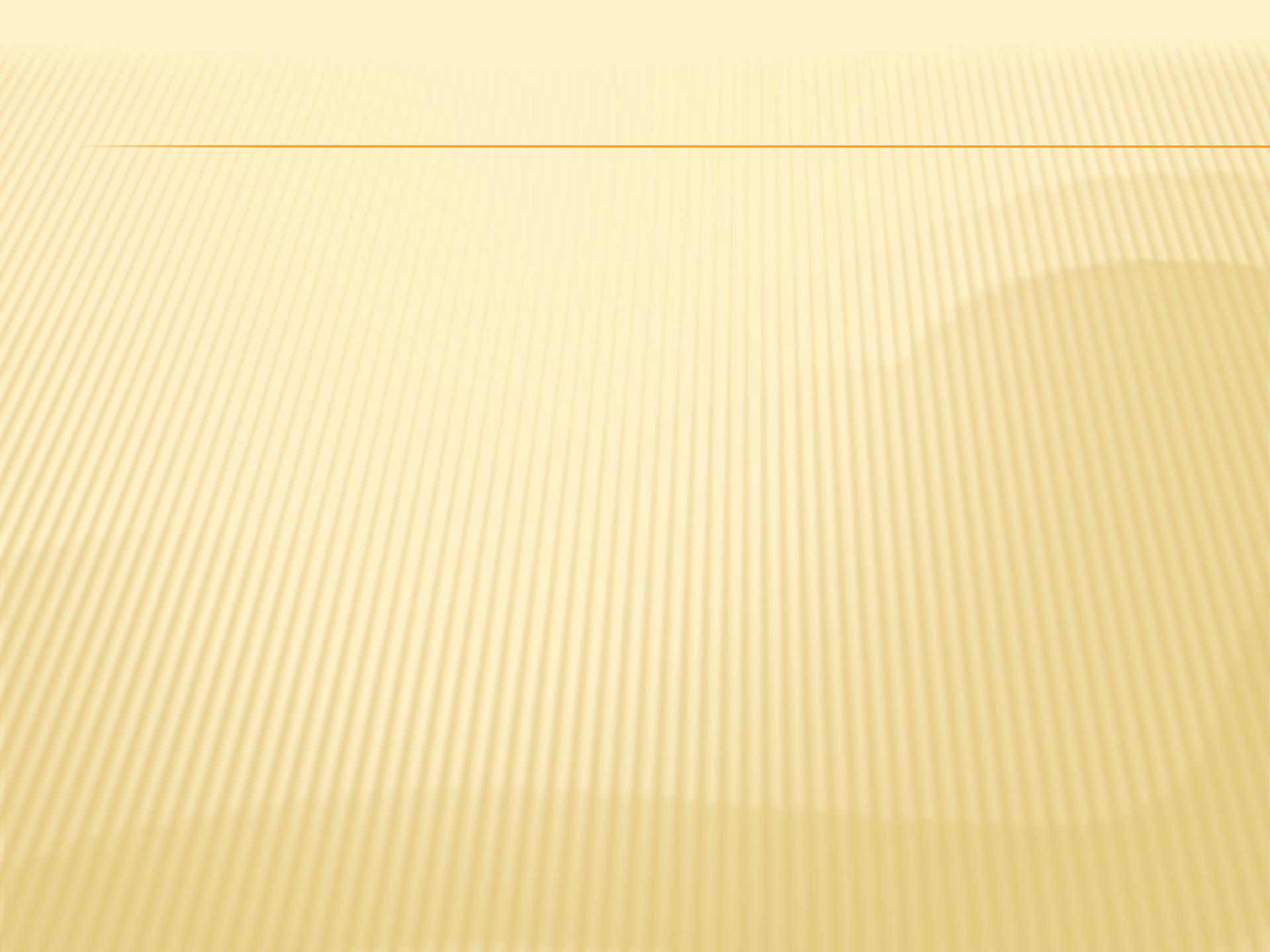
Statistics from ND State Lab

Synthetic Cannabinoid Statistics



SYNTHETIC CANNABINOID BLEND STUDY

- Melinda Combs – Johnson County Crime Lab (Kansas)
- 130 blends were tested over the course of one year
 - 33 tested negative & 97 tested positive
 - At the beginning most of the products contained JWH-018 and/or JWH-073
 - Gradual shift to other synthetic cannabinoids took place, most likely due to individual state's controlling JWH-018 and JWH-073
 - 11 different synthetic cannabinoids were detected



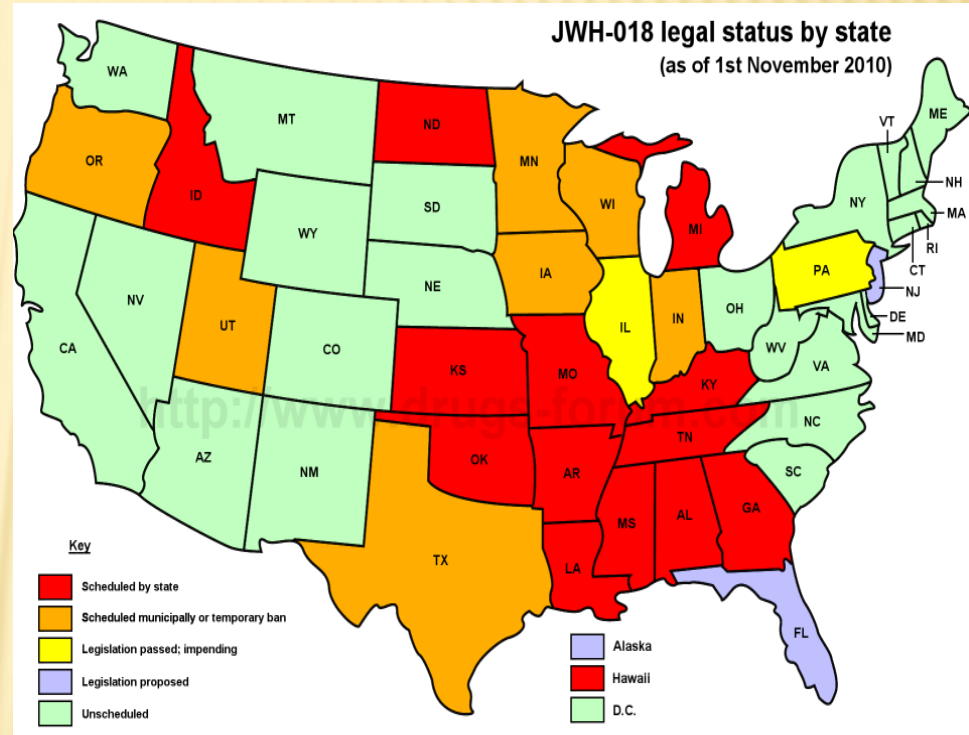
NORTH DAKOTA EMERGENCY SCHEDULING

- Feb 2010: ND State Board of Pharmacy Emergency Scheduled 5 synthetic cannabinoids:
 - JWH-018
 - JWH-073
 - CP47,497(including all homologues)
 - HU-210
 - HU-211
- Also included MDPV & Mephedrone
(Bath Salt products)



OTHER STATES IMPLEMENTING LAWS:

- ✗ Alabama
- ✗ Arkansas
- ✗ Georgia
- ✗ Hawaii
- ✗ Idaho
- ✗ Iowa
- ✗ Kansas
- ✗ Kentucky
- ✗ Texas
- ✗ Louisiana
- ✗ Michigan
- ✗ Mississippi
- ✗ Missouri
- ✗ Oklahoma
- ✗ Oregon
- ✗ Tennessee
- ✗ Other states with legislation proposed



**Map Shows Legal Status of JWH-018 as of 1st Nov 2010

WHY CONTROLLING SPECIFIC COMPOUNDS ISN'T WORKING

- Composition of these products continues to change
- As certain compounds become controlled, new ones are being introduced to replace the ones that have become illegal.
- Large number of potential cannabinoid compounds that could be synthesized

GENERIC CONTROL

- 2009 United Kingdom introduced a generic legislation that controlled 6 chemical classes rather than specific chemical compounds
 - Creates a grouping system where anything in that group would be considered illegal whether it had pharmacological effects or not
 - Encompasses hundreds of compounds
 - Very proactive approach to problem
- First state in U.S. to pass such legislation is Nebraska
 - Other states considering this type of legislation
 - Idaho, Florida, Missouri, Kansas, Texas, Montana & Wyoming
 - North Dakota – SB2119

GENERIC CONTROL

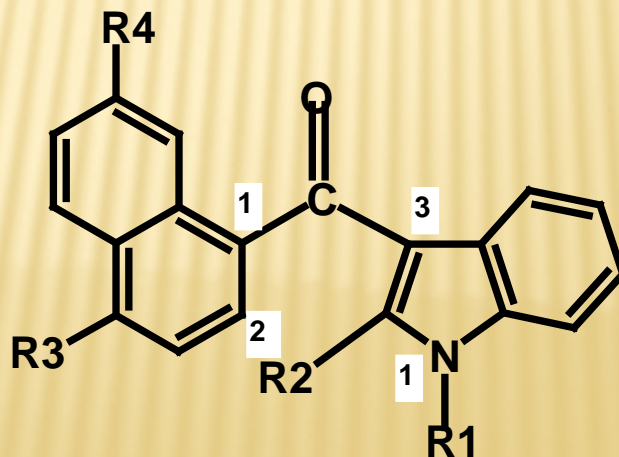
- Appropriate for groups of substances where:
 - Relatively simple substitution patterns occur in a structural nucleus
 - A large number of examples are already known
 - Synthesis of further analogues might be anticipated
 - The target group can be encompassed with a simple definition

SB2119 - PASSED

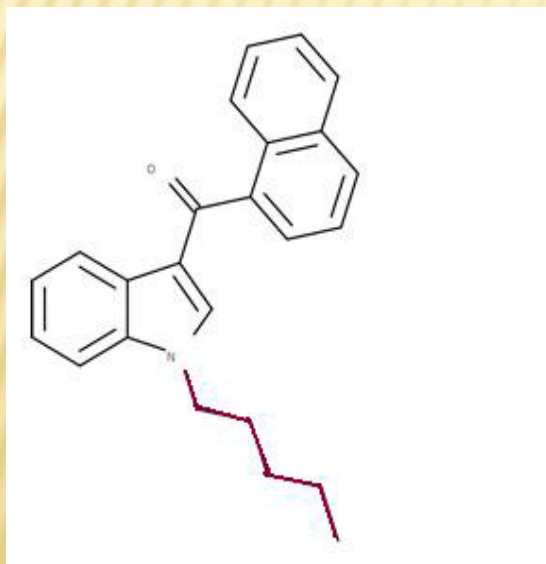
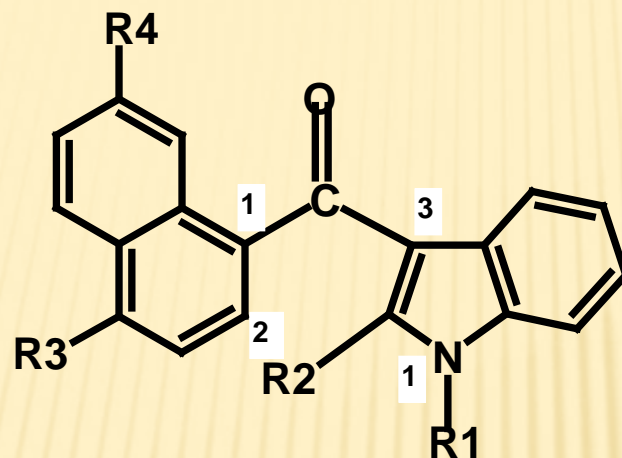
- Grouping Cannabinoids into seven groups and controlling the group rather than specific compounds
- Similar to UK's law
- Lists examples from each group
- August 1st 2011 goes into effect
- Lab Report will state what compound was identified and what group it belongs to

SB2119

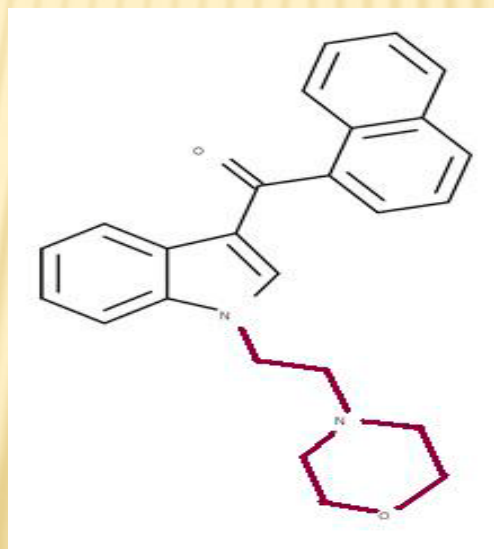
- Gives detailed definition of each group
 - **Naphthoylindoles:** Any compound containing a 3-(1-naphthoyl)indole structure with substitution at the nitrogen atom of the indole ring by an alkyl, haloalkyl, alkenyl, cycloalkylmethyl, cycloalkylethyl, 1-(N-methyl-2-piperidiny)methyl, or 2-(4-morpholinyl)ethyl group, whether or not further substituted in the indole ring to any extent and whether or not substituted in the naphthyl ring to any extent. Examples include:
 - 1-Pentyl-3-(1-naphthoyl)indole – Other names: JWH-018
 - 1-Butyl-3-(1-naphthoyl)indole – Other names: JWH-073



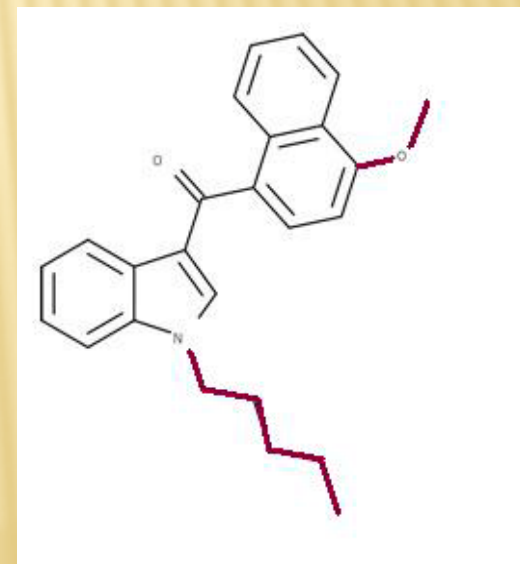
NAPHTHOYLINDOLES



JWH-018



JWH-200

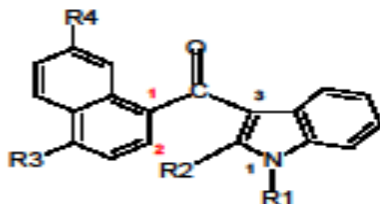


JWH-081

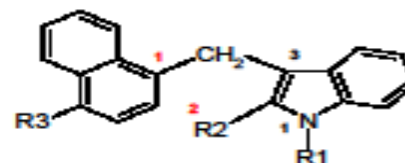
CANNABINOIDS HAVE BEEN CLASSIFIED INTO NINE GROUPS

9 GROUPS OF CANNABINOIDS

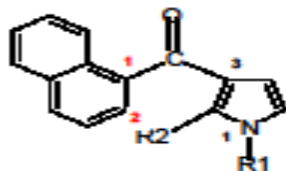
Group 1: Naphthoylindoles



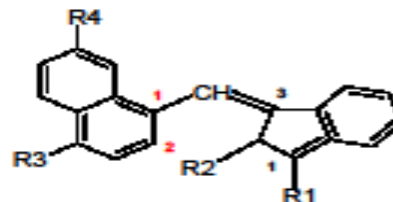
Group 2: Naphthylmethylindoles



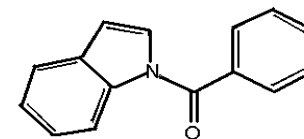
Group 3: Naphthoylpyrroles



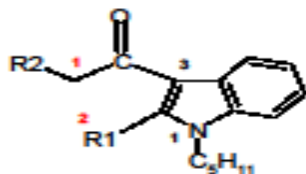
Group 4: Naphthylmethylindenes



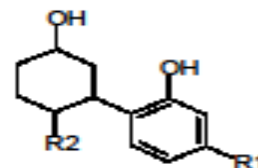
*Group 9: Benzoylindoles



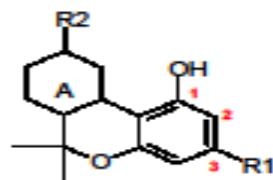
Group 5: Phenylacetylindoles



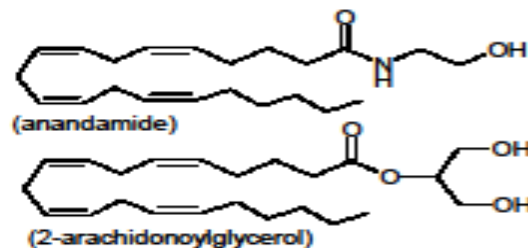
Group 6: Cyclohexylphenols



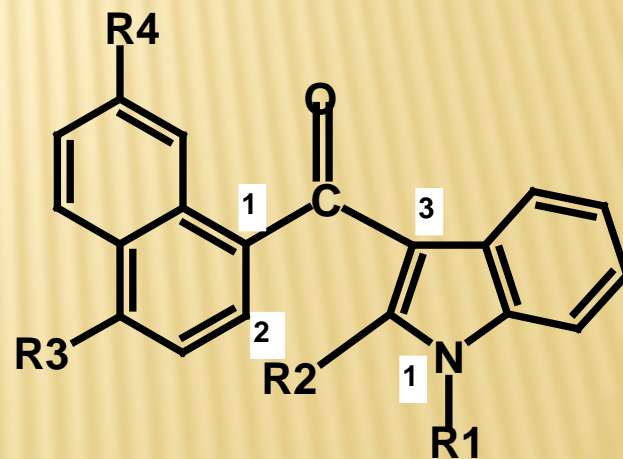
Group 7: Classical Cannabinoids
(Dibenzopyrans/HU compounds)



Group 8: Endocannabinoids



COMPOUND	BINDING AFFINITY (CB1): K_i (nM)
➤ Δ^9 -THC	➤ 10.2
➤ JWH-018	➤ 2.9
➤ JWH-073	➤ 8.9
➤ JWH-081	➤ 1.2
➤ JWH-200	➤ 42
➤ JWH-122	➤ 0.69
➤ JWH-210	➤ 0.46
➤ JWH-398	➤ 2.3
➤ AM-2201	➤ 1.0



GROUP 1: NAPHTHOYLINDOLES

COMPOUND

BINDING AFFINITY (CB1): K_i (nM)

➤ Δ^9 -THC

➤ 10.2

➤ JWH-175

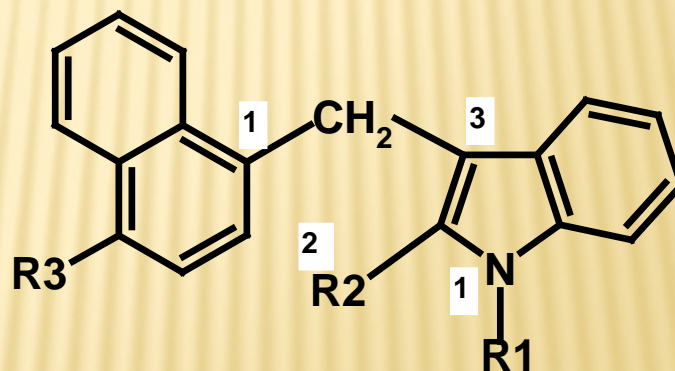
➤ 22

➤ JWH-184

➤ 23

➤ JWH-199

➤ 20



GROUP 2: NAPHTHYLMETHYLINDOLES

COMPOUND

BINDING AFFINITY (CB1): K_i (nM)

➤ Δ^9 -THC

➤ 10.2

➤ JWH-145

➤ 14

➤ JWH-146

➤ 21

➤ JWH-147

➤ 11

➤ JWH-307

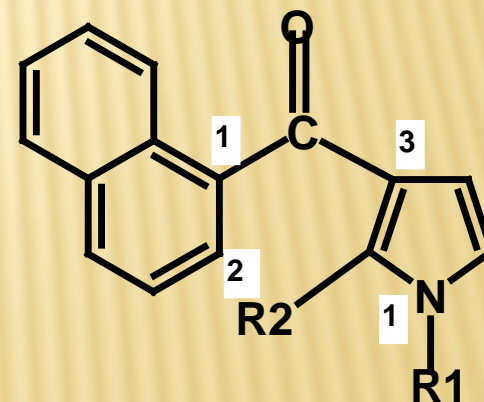
➤ 7.7

➤ JWH-368

➤ 16

➤ JWH-347

➤ 333



GROUP 3: NAPHTHOYLPYROLES

COMPOUND

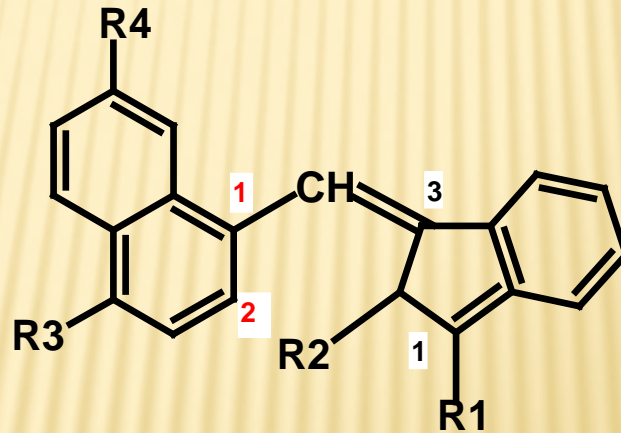
BINDING AFFINITY (CB1): K_i (nM)

➤ Δ^9 -THC

➤ 10.2

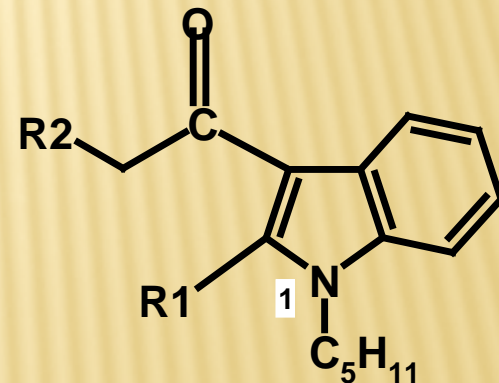
➤ JWH-176

➤ 26



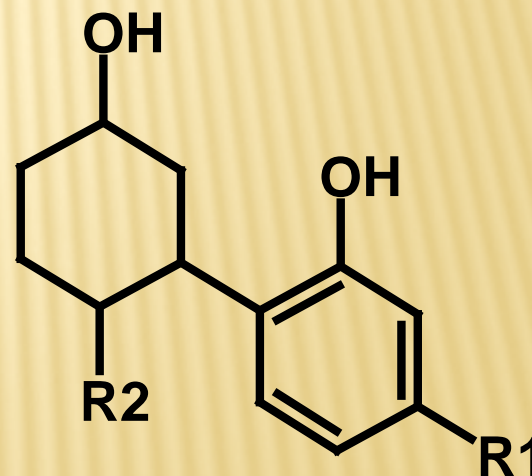
GROUP 4: NAPHTHYLMETHYLINDENES

COMPOUND	BINDING AFFINITY (CB1): K_i (NM)
➤ Δ^9 -THC	➤ 10.2
➤ JWH-250	➤ 11
➤ JWH-251	➤ 29
➤ JWH-167	➤ 64
➤ JWH-203	➤ 8
➤ JWH-204	➤ 13
➤ RCS-8	➤ ?



GROUP 5: PHENYLACETYLINDOLES

COMPOUND	BINDING AFFINITY (CB1): K_i (nM)
➤ Δ^9 -THC	➤ 10.2
➤ CP-55,940	➤ 0.35
➤ CP-47,497	➤ 9.5
➤ CP-47,497 (C8) <small>*cannabicyclohexanol</small>	➤ 4.7
➤ CP-47,497 (C6)	➤ 126
➤ CP-47,497 (C9)	➤ 28.5

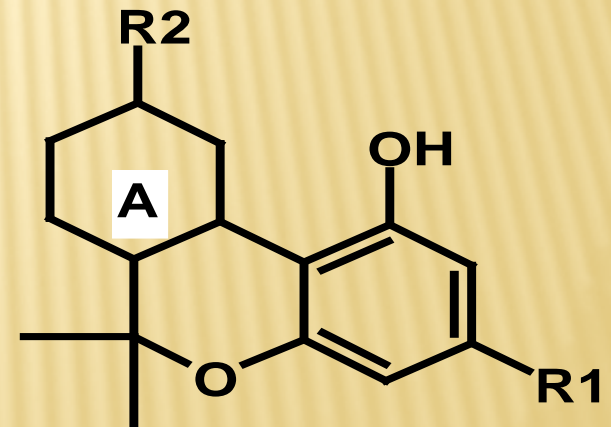


GROUP 6: CYCLOHEXYLPHENOLS

COMPOUND

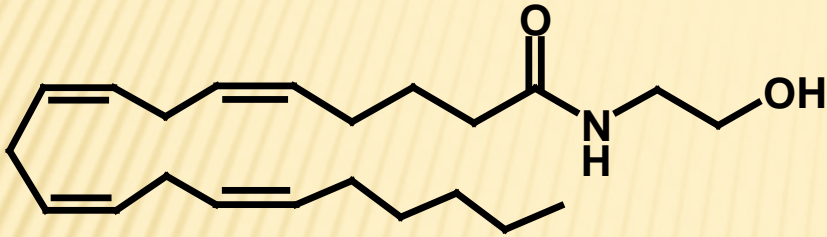
BINDING AFFINITY CB1: K_i (nM)

- | | |
|-------------------|--------|
| ➤ Δ^9 -THC | ➤ 10.2 |
| ➤ HU-210 | ➤ 0.06 |
| ➤ HU-211 | ➤ >100 |
| ➤ Nabilone | ➤ 1.84 |
| ➤ JWH-051 | ➤ 19 |
| ➤ JWH-133 | ➤ *** |

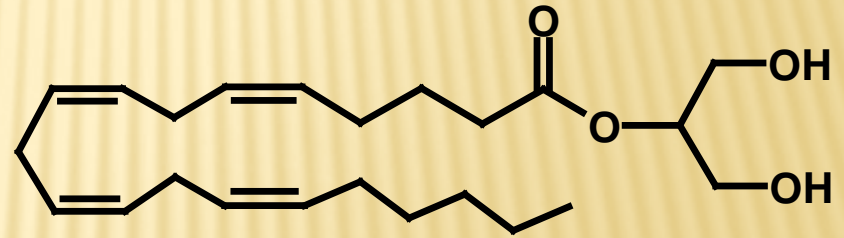


GROUP 7:
TRADITIONAL CANNABINOIDS (DIBENZOPYRANS)

Anandamide



2-Arachidonylglycerol



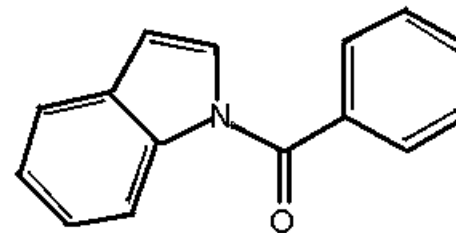
GROUP 8: ENDOCANNABINOIDS

COMPOUND

- AM-694
- Pravadoline (WIN 48,098)
- RCS-4
- AM-630
- AM-1241

BINDING AFFINITY

- 0.08
- ?
- ?
- ?
- ?



GROUP 9: BENZOYLINDOLES



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Crime Laboratory Division
2641 East Main Avenue
Bismarck, ND 58501-5044

Tel. (701) 328-6159
(800) 296-2054
Fax (701) 328-6185

DRUG LABORATORY REPORT

Case Number: CLD11-00335
Subject: Bad Guy
Report Date:
Report To: Miller, Casey
Submitting Agency: Metro Area Narcotic Task Force
Agency Case Number:
Submitted Date/Time: April 29, 2011 10:52
Item(s) Submitted:

Item 1: One sealed plastic bag containing one ziploc package containing plant material.
Item 2: One sealed plastic bag containing one ziploc package containing plant material.

Summary of Analysis:

Item	Submitted	Substance Found
Item 1	3.00 grams	JWH-018 (Naphthoylindole) JWH-073 (Naphthoylindole) JWH-250 (Phenylacetylindole) RCS-8 (Phenylacetylindole)
Item 2	2.58 grams	RCS-4 (Benzoylindole) AM-2201 (Naphthoylindole)

Disposition:

All items: Return to agency

The results and conclusions in this report are the opinions and interpretations of the analyst(s) from the analysis of submitted evidence.

Sincerely,

Crime Laboratory Division

Charlene R Schweitzer
Forensic Scientist

DEA SCHEDULES FIVE COMPOUNDS

- March 1, 2011 – DEA temporarily placed 5 synthetic cannabinoids into the CSA:
 - JWH-073
 - JWH-018
 - JWH-200
 - CP 47,497
 - CP 47,497 (DMOH) – Cannabicyclohexanol
- Why JWH-200?
 - Was seen in large shipment seized by the Customs and Border Patrol (JWH-018 & JWH-200) – Federal Registrar 1 March 2010
 - Can be used as starting point for analog act

H.R. 1254

- Bill introduced in the U.S. House of Representatives March 30, 2011
 - Cited as “Synthetic Drug Control Act of 2011”
 - Addition of Synthetic Drugs to Schedule 1 of the Controlled Substances Act
 - Utilizing a grouping system similar to SB2119 and what the UK implemented for synthetic cannabinoids
 - “Cannabimimetic Agents” – any substance that is a cannabinoid receptor type 1 (CB1 receptor) agonist as demonstrated by binding studies and functional assays within the following classes:
 - Lists classes and gives definition of substitutions
 - Lists 15 examples but not under each group
- Also lists 15 additional drugs
 - Cathinone compounds – Bath Salt Products

IDENTIFIED IN NORTH DAKOTA

- CP47,497 C8 Homologue
- JWH-200
- JWH-018
- JWH-073
- JWH-081
- RCS-8
- RCS-4
- RCS-4 C4 Homologue
- AM-2201
- JWH-250
- JWH-015
- JWH-210
- JWH-019
- JWH-122
- JWH-203
- WIN 48,098
(Pravadoline)

RCS-8 (SR-18) IN NORTH DAKOTA

- JWH like compound – Analog of JWH-250
 - Dr. Huffman did NOT synthesize this compound
- ND first state to see in powder form
 - Sent small portion of sample to DEA special testing lab
- No studies done on affinities for CB1 or CB2
- DEA confirmed structure by NMR and synthesized compound
- Confirms high level of sophistication of those making “K2/Spice” (**JWH-398)



OTHERS IDENTIFIED OR VENDORS ON INTERNET SELLING:

- JWH-007
- JWH-022
- JWH-251
- JWH-019
- JWH-122
- JWH-398
- AM 694
- RCS-8 C8 Homologue
- JWH-307
- JWH-370
- AM-1220
- AM-630
- AM-1241
- JWH-201
- JWH-302
- Few yet to be determined
- First Synthetic Cannabinoid Clandestine Lab found in Kansas (Sept 2010)
 - Research chemist trying to synthesize JWH-250

ANALYSIS

- Analyzed via GC/MS instrumentation
 - Gas Chromatograph/Mass Spectrometer
 - Separates and Identifies
 - Confirmation Test
 - Compared to Standard analyzed on instrument under same conditions
- Also rinse paraphernalia with solvent and analyze via GC/MS

LACK OF AUTHENTICATED STANDARDS

- The fact that these compounds are changing so rapidly also creates the issue of lack of authenticated standards.
 - In order for the lab to make an identification of a compound:
 - Need to purchase a standard from a reputable chemical company
 - Analyze on our instruments under same conditions
 - Compare to unknown sample
 - Without a standard in house: Report as “Tentatively Identified as.....”
 - “Presumptively” vs. “Tentatively”

DANGEROUS FOR CONSUMER?

- No human studies carried out
 - (“Few formal studies have been published”) European Monitoring Centre for Drugs and Drug Addiction
- Little known about the detailed pharmacology, toxicology & safety of these substances
- Due to chemical structural features they may have carcinogenic potential
- Long term & short term effects / Combined effects → Unknown
- Active in low doses: risk of accidental overdosing with risk of severe psychiatric complications
- Little is known about the recipe of each herbal preparation or how much of the active ingredient is present

DIFFERENCES FROM MARIJUANA

According to Dr. Huffman's research on JWH compounds:

- Increases blood pressure (opposite of THC)
- Increases pulse rate
- More intense and prolonged than THC
- Seems to be more addictive
 - Possible potential danger to overdose



HARMFUL EFFECTS?

- Since the beginning of 2010, the American Association of Poison Control Centers has received 2,000 reports of people becoming ill after smoking “SPICE” compared to a dozen in 2009
- Reports indicate more & more people have been showing up in the Emergency Rooms after smoking
 - Extreme Anxiety, Agitation, Tachycardia, Elevated Blood Pressure & Hallucinations
 - Vomiting, Tremors, Paranoid Behavior & Seizures

PRODUCTS RESEMBLING HASH CONTAINING SYNTHETIC CANNABINOIDS



WHAT'S NEW



WICKED LIQUID X

- **Advertised as:**
 - Very Potent
 - Long Lasting
 - Add to your Cigarettes
 - Over 60 applications
- Sample submitted to lab contained JWH-018
- Brand also produces many other flavored herbal blends

WHAT'S NEW

WHAT'S NEW

- Oxycodone Mimic Tablets Actually Containing Benzylpiperazine (BZP) and JWH-018 in Maryland



FAQ'S

- Field Tests?

- No reliable field test available
- Will NOT give positive field test for Marijuana

- Urine and Saliva Drug Tests

- Will not show up on a *traditional* drug test. The metabolites of the newer compounds are unknown.
- Currently Redwood Toxicology Laboratory, NMS and Medtox do confirmation tests for JWH-018 & JWH-073 metabolites. (Possibly more labs?)
 - Redwood Toxicology: “First lab to offer oral fluid parent drug test and urine metabolite testing”
 - JWH-018, JWH-073 & JWH-250 in oral fluid (24-48 hrs detection window)
 - JWH-018 & JWH-073 in urine samples (72 hr detection window with low dose)

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- North Dakota Attorney General's Office

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QUESTIONS

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